

## ABSTRACT

A system and method for generating hydrogen gas is described. The system uses a vessel for holding an electrolyte solution. A membrane is arranged in the vessel to form a chamber, and a cathode electrode is positioned in the chamber and in the electrolyte solution. An electric current is applied to the cathode, and with a cooperating anode, produces hydrogen gas using an electrolysis process. The membrane traps the hydrogen in the chamber, and assists in keeping the hydrogen separate from oxygen or other gasses. The hydrogen gas is exhausted from chamber for further refining, storage, or use.